



Rediscovery of *Sporophila frontalis* (Verreaux, 1869) (Aves, Thraupidae) in the state of Rio Grande do Sul, southern Brazil

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Abstract: The Buffy-fronted Seedeater, *Sporophila frontalis* (Verreaux, 1869) (Aves, Thraupidae), is a threatened passerine endemic to the Atlantic Forest of southeastern South America. Habitat loss and illegal capture for the pet trade has reduced the geographical distribution of this species. The Brazilian state of Rio Grande do Sul represents the southernmost limit of this species' range. There, *S. frontalis* was last recorded in 1883, and currently this species is thought to be as extirpated in this state. After 133 years, we report photographic and audiotape records of *S. frontalis*, made in the municipalities of Maquiné and Mampituba, Rio Grande do Sul.

Key words: Atlantic Forest; bamboo-specialist; Buffy-fronted Seedeater; endemic species; pixoxó

The Buffy-fronted Seedeater, *Sporophila frontalis* (Verreaux, 1869) (Aves, Thraupidae), is a passerine endemic to the Atlantic Forest of southeastern South America (BIRDLIFE INTERNATIONAL 2016). This species has nomadic habits associated with seeding events of bamboos and its diet is composed almost entirely of seeds of these plants (ARETA et al. 2013). The former range of *S. frontalis* extended from Bahia to Rio Grande do Sul (eastern Brazil) to the province of Misiones (northwestern Argentina), and the department of Alto Paraná (southeastern Paraguay) (BIRDLIFE INTERNATIONAL 2016). Habitat loss and illegal capture for the pet trade have severely reduced the global population of this species (BIRDLIFE INTERNATIONAL 2016). Consequently, it has been extirpated from several areas of its former range and the remaining populations are at risk of extinction globally, nationally, and regionally (e.g., CONSEMA 2011; MMA 2014; RIO GRANDE DO SUL 2014; BIRDLIFE INTERNATIONAL 2016).

In Rio Grande do Sul, the southernmost state in Brazil, *Sporophila frontalis* reaches its southern limit of its distribution; however, it is currently considered extirpated

(RIO GRANDE DO SUL 2014). The only confirmed record in the state is from Colônia Mundo Novo, a former colony of German immigrants located north of the municipality of Taquara (BENCKE et al. 2003). Based on reports by a resident (Theodor Bischoff), the naturalist Hermann von Ihering stated that the species occurred in astonishing numbers in rice fields at Picada Arroio Grande in 1883, a locality in the Colônia Mundo Novo currently known as Solitária, municipality of Igrejinha (BELTON 1985; BENCKE et al. 2003). Two undated specimens collected by Bischoff at this locality are so far the only tangible evidence available for Rio Grande do Sul (BELTON 1985; BENCKE et al. 2003). Here, we present the rediscovery of *S. frontalis* in Rio Grande do Sul, 133 years after the previous and only record. Our rediscovery is based on documented observations made in the municipalities of Maquiné and Mampituba, in northeastern Rio Grande do Sul.

Our first record was made near the Maquiné River (29°37'42" S, 050°15'00" W; 57 m above sea level) on the road to Barra do Ouro, municipality of Maquiné (Figure 1), on 8 January 2015. A single adult male was observed for 3 min and had its voice recorded (WA1573595, available at WikiAves, <http://www.wikiaves.com.br/1573595>) on the edge of a disturbed riparian forest surrounded by second-growth woodland, rice paddies, and pastures. No bamboo thickets were noted in this area, but slopes and hills to the southwest are extensively forested where bamboo stands are likely present. Our second and third records were in the surroundings of Cachoeira dos Borges (29°17'22" S, 049°58'56" W; 320 m above sea level), municipality of Mampituba (Figure 1), on 10 and 11 September 2016. At least 10 individuals were heard on a slope covered with submontane forest (Figure 2). An unidentified species of bamboo was common on the forest edges, but inaccessibility prevented us from determining whether it was seeding. An individual (Figures 3, 4) attracted with playback displayed aggressive interspecific behavior towards

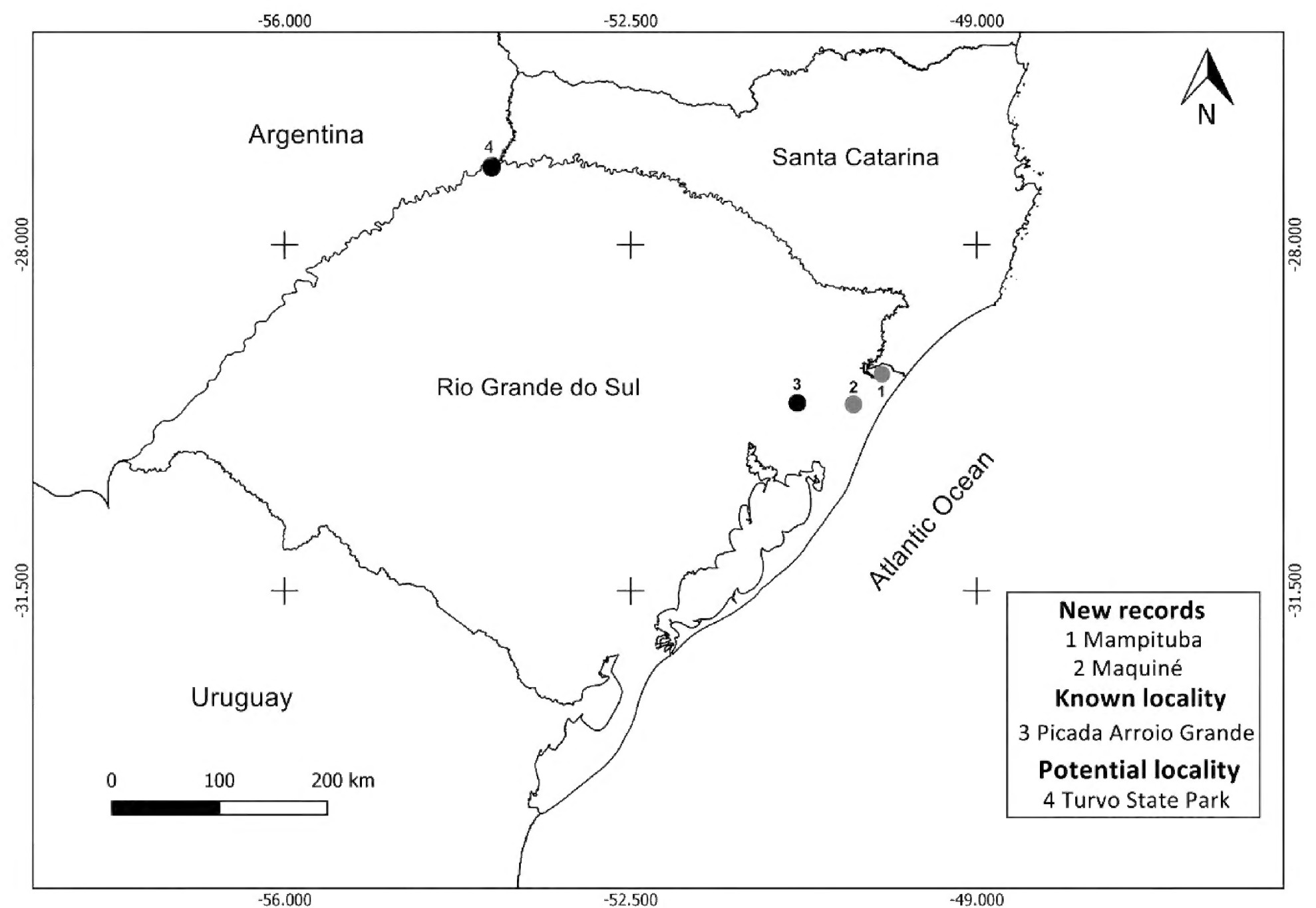
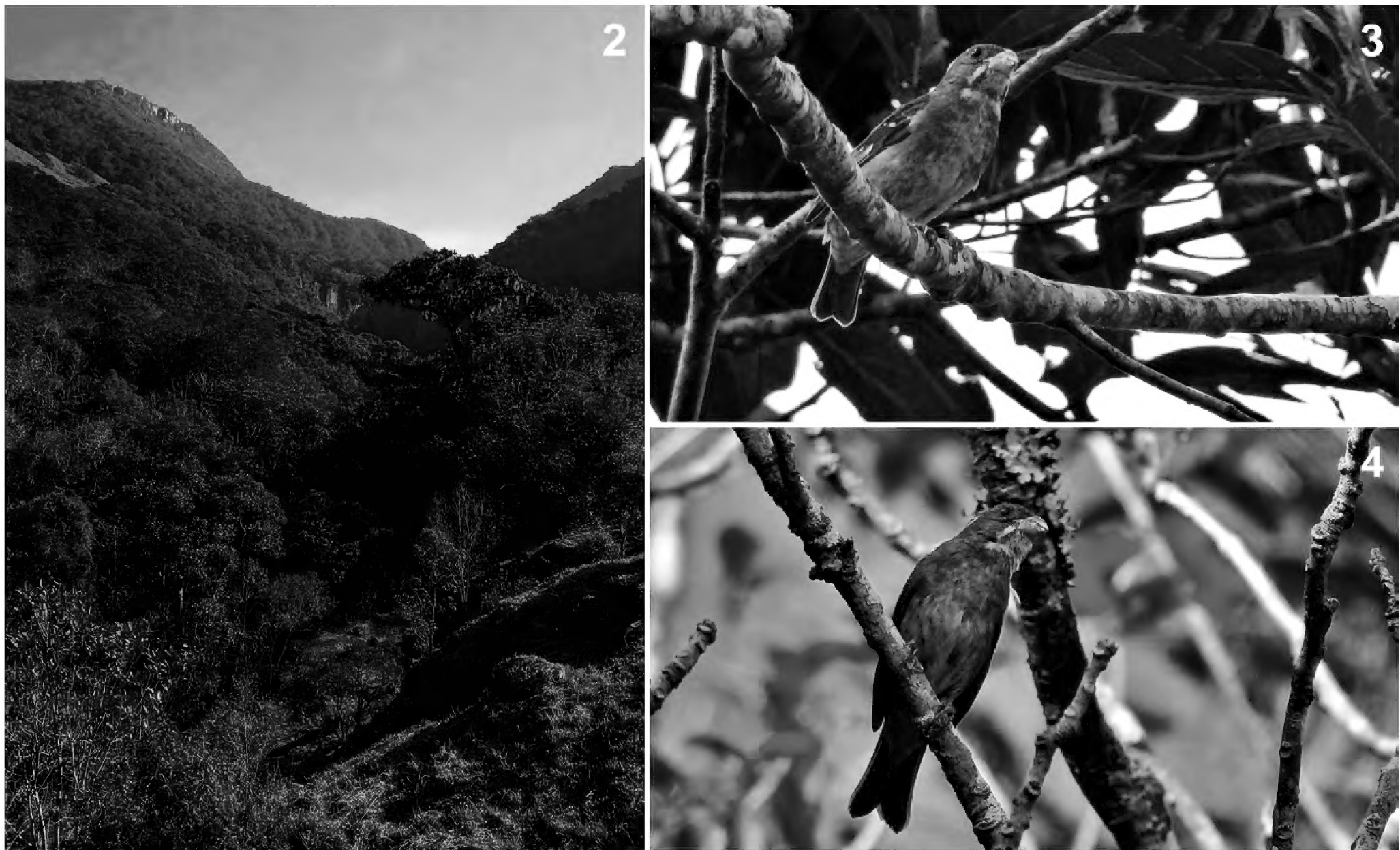


Figure 1. Known and potential localities of occurrence of *Sporophila frontalis* (Verreaux, 1869) in the state of Rio Grande do Sul, southern Brazil.



Figures 2–4. Habitat and photographic records of *Sporophila frontalis* (Verreaux, 1869) in the surroundings of Cachoeira dos Borges, municipality of Mampituba, Rio Grande do Sul, Brazil. **2.** Submontane forest in the surroundings of Cachoeira dos Borges where the species was found. **3, 4.** Adult male *Sporophila frontalis*, 11 September 2016. Photographs by R. D. Colvero.

other birds, including Buff-fronted Foliage-gleaner, *Philydor rufum* (Vieillot, 1818); Golden-winged Cacique, *Cacicus chrysopterus* (Vigors, 1825); and Uniform Finch, *Haplospiza unicolor* Cabanis, 1851. The last species is also a bamboo-specialist and was fairly common at the time of our observations. The two localities are 45 km apart.

Individuals were identified based on their overall olive plumage, whitish marks on the throat and head, and distinctive voice (RIDGELY et al. 2015). Such morphological features are absent in any other potentially syntopic *Sporophila* seedeater, namely Double-collared Seedeater, *S. caerulescens* (Vieillot, 1823); Rusty-collared Seedeater, *S. collaris* (Boddaert, 1783); and Lined Seedeater, *S. lineola* (Linnaeus, 1758) (BELTON 1985; BENCKE 2010; WikiAves, <http://www.wikiaves.com/>) and can be readily seen in the individual depicted on Figures 3, 4.

Including our recent records, *S. frontalis* is now known with certainty from three localities in Rio Grande do Sul (Figure 1). In addition, there is an unconfirmed historical record in the mid-1980s from the Camaquã River, municipality of Encruzilhada do Sul (BENCKE et al. 2003). Furthermore, the species is expected to occur in Turvo State Park (BENCKE et al. 2003), a protected area near the Argentine province of Misiones where this species has been recorded (CHEBEZ 2008).

Our records are near recent records in southern Santa Catarina state (JUST et al. 2015; WikiAves, http://www.wikiaves.com.br/mapa_pixoxo). This suggests that the forested slopes of the Serra Geral have the only confirmed recent occurrences of *S. frontalis* in Rio Grande do Sul. Interestingly, all the records in southern Santa Catarina were made in the last eight years (ROSÁRIO 1996; ARETA et al. 2013; JUST et al. 2015; WikiAves, http://www.wikiaves.com.br/mapa_pixoxo) which may suggest a recent range expansion or recolonization by *S. frontalis* along the Serra Geral of southern Santa Catarina and northeastern Rio Grande do Sul.

Our observations may directly affect the conservation status of *S. frontalis* in Rio Grande do Sul and may reallocate it from “regionally extinct” to other category (RIO GRANDE DO SUL 2014). Nevertheless, conservation strategies for nomadic species associated with bamboo-seeding events may be especially difficult, and conserving a network of natural areas with bamboo seeding at different times and places may be the most effective strategy to ensure viable populations (ARETA & COCKLE 2012). In the region of our records, for example, forests along the Serra Geral remain continuous from near Serra do Tabuleiro in central Santa Catarina to the Maquiné river valley in northern Rio Grande do Sul (BENCKE et al. 2006). This area encompasses five protected areas, namely Serra do Tabuleiro State Park, Serra Furada State Park, Aguaí Biological Reserve, Aparados da Serra National Park, and Serra Geral Biological Reserve. Most of these parks are considered Important Bird Areas due to the presence of populations of several threatened species endemic to the Atlantic Forest (BENCKE et al. 2006). The records presented here, in addition to

those from Santa Catarina, suggest that the region can sustain a significant population of *S. frontalis* and that habitat continuity may be maintaining the resources that this species depends on.

As most for *Sporophila* species (BENCKE et al. 2003; VIZENTIN-BUGONI et al. 2013), *S. frontalis* is highly targeted and captured for the pet trade in some regions of Brazil (ARETA et al. 2013). However, *S. frontalis* is absent from most inventories of trafficked birds in Rio Grande do Sul (FERREIRA & GLOCK 2004; ARAÚJO et al. 2010), and thus, we argue that the possibility that our observations represent escapees of captive individuals is unlikely. Indeed, records of single individuals in areas without evident presence of bamboo patches (such as one of ours) may likely represent isolated individuals searching for bamboo patches (ARETA et al. 2013). We recommend that further search effort be undertaken for *S. frontalis* in potential places in Rio Grande do Sul. Such places would include the Serra Geral slopes and Turvo State Park, and searches should especially be done during seeding-bamboo events.

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